

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Bonner et al.

Art Unit: Unassigned

Application No. Unassigned

Examiner: Unassigned

Filed: November 7, 2001

For: A KIT FOR DETERMINING DNA  
DOUBLE-STRANDED BREAKS WITH  
ANTI- $\gamma$ -H2A ANTIBODIES

**PENDING CLAIMS AFTER ENTRY OF PRELIMINARY AMENDMENT**

27. A kit for determining DNA double-stranded breaks, wherein said kit comprises (i) an isolated or purified antibody or antigenically-reactive fragment thereof that binds to a C-terminal amino acid sequence of an H2A histone protein, said C-terminal amino acid sequence consisting of SQ(D/E/A)(I/L/Y/F) (SEQ ID NO:1) that comprises a phosphorylated serine, wherein the antibody or antigenically reactive fragment thereof does not detectably bind to a C-terminal amino acid sequence of an H2A histone protein, said C-terminal amino acid sequence consisting of SQ(D/E/A)(I/L/Y/F) (SEQ ID NO:1) that does not comprise a phosphorylated serine under conditions when the isolated or purified antibody or antigenically-reactive fragment thereof binds to the C-terminal amino acid sequence of an H2A histone protein, said C-terminal amino acid sequence consisting of SQ(D/E/A)(I/L/Y/F) (SEQ ID NO:1) that comprises a phosphorylated serine, and (ii) a means of facilitating detection of binding of said antibody or antigenically-reactive fragment thereof to an H2A histone protein.

28. The kit of claim 27, wherein said phosphorylated serine is about four amino acids from the C-terminus of said H2A histone protein.

29. The kit of claim 27, wherein said fragment is selected from the group consisting of Fab, Fab', F(ab')<sub>2</sub>, and F(v).

30. The kit of claim 27, wherein said H2A histone protein is mammalian.
31. The kit of claim 30, wherein said H2A histone protein is H2AX.
33. The kit of claim 1, wherein said means of facilitating detection is an enzyme, a radioactive isotope, a fluorescent molecule, biotin, or a labeled secondary antibody that detects binding of said antibody or antigenically-reactive fragment thereof to said H2A histone protein.
34. The kit of claim 33, wherein said labeled secondary antibody is linked to an enzyme.

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